

Desired Results

Standard

MAFS.7.NS.1.3: Solve real-world and mathematical problems involving the four operations with rational numbers.

Cognitive Complexity: Level 2, Basic Application of Skills and Concepts

[Access Point](#)

MAFS.7.NS.1.AP3a: Solve real-world and mathematical problems involving the four operations with rational numbers from -100 to 100.

Supporting Standard(s)

When students work toward meeting this standard (which is closely connected to 7.NS.1.1 and 7.NS.1.2), they consolidate their skill and understanding of addition, subtraction, multiplication and division of rational numbers.

MAFS.7.NS.1.1: Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.

MAFS.7.NS.1.2: Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.

[Access Point](#)

MAFS.7.NS.1.AP.1a

Identify rational numbers that are an equal distance from 0 on a number line as additive inverses.

MAFS.7.NS.1.AP.1b

Find the distance between two rational numbers on a number line.

MAFS.7.NS.1.AP.2a

Solve single-digit rational number multiplication problems using a number line.

MAFS.7.NS.1.AP.2b

Solve division problems with quotients from -100 to 100 using a number line.

MAFS.7.NS.1.AP.2c

Write equations to represent rational number multiplication and division problems solved on a number line and generate rules for the products and quotients of rational numbers.

MAFS.7.NS.1.AP.3a

Solve real-world and mathematical problems involving the four operations with rational numbers from -100 to 100.

Unpacked Standard Concepts

Students will know . . .

(Underlined Nouns/Noun Phrases)

- Real-world problems
- Mathematical problems
- Four operations with rational numbers
-

Unpacked Standard Skills

Students will be able to . . .

(Circled Verbs/Verb Phrases)

- Solve

**Prerequisite Knowledge and Skills Within Standard
(Implied)**

For more information: <http://www.p21.org>

- Critical thinking and problem-solving skills
- Flexibility and adaptability
- Attention and self-regulation
- Creativity and innovation skills

**Instructional Implications of the Standard
(Instruction Needed to Ensure Student Mastery of the Standard)**

- Students must be provided with the opportunity to utilize a variety of tools to solve problems involving the four operations with rational numbers (e.g., visual models to solve the problem).
- Review/reteach students understanding of addition and subtraction, including utilization of a horizontal/vertical number line.
- Review/reteach understanding of multiplication/division (including fractions).
- Explicitly teach and model critical thinking and problem solving skills
- Support students' critical thinking and problem-solving skills
- Support students' focus, attention and self-regulation
- Support creativity and innovation skills

Learning Goal I can solve real-world and mathematical problems involving the four operations with rational numbers.	Essential Questions (In student-friendly language) In real life, when would I need to add, subtract, multiple, and/or divide rational numbers? What is an efficient strategy for solving real-world problems with rational numbers? What tools could I use to solve real-world problems involving the four operations with rational numbers?
IEP Learning Goal I can solve real-world and mathematical problems using addition, subtraction, multiplication, or division with rational numbers, with 85% accuracy on quizzes and test where operations from -100 to 100 are assessed by the end of the school year.	

Assessment Evidence											
Performance Tasks: <ul style="list-style-type: none"> Add, subtract, multiply, and divide positive and negative fractions Evaluate a numerical expression Rewrite complex fractions as simple fractions in lowest terms Solve a real-world problem that involves finding the average of positive and negative decimal numbers Solve a real-world problem involving divisions of fractions <p>Note: Students should not be limited to fractions but receive practice with rational numbers in various forms within the same problem to address the standard</p>	Other evidence: <table> <tr> <th colspan="2">Scale</th></tr> <tr> <td>4</td><td>In addition to score 3.0, I can explain my thinking.</td></tr> <tr> <td>3</td><td>In addition to score 2.0, I can: <ul style="list-style-type: none"> Add, subtract, multiply and divide rational numbers Create and solve real world problems with rational numbers Create and solve mathematical problems with rational numbers </td></tr> <tr> <td>2</td><td>I can: <ul style="list-style-type: none"> Understand the concepts, symbols, and vocabulary for positive and negative number </td></tr> <tr> <td>1</td><td>With help, I can have partial success with 2.0 content</td></tr> </table>	Scale		4	In addition to score 3.0, I can explain my thinking.	3	In addition to score 2.0, I can: <ul style="list-style-type: none"> Add, subtract, multiply and divide rational numbers Create and solve real world problems with rational numbers Create and solve mathematical problems with rational numbers 	2	I can: <ul style="list-style-type: none"> Understand the concepts, symbols, and vocabulary for positive and negative number 	1	With help, I can have partial success with 2.0 content
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Test Item Specs (http://fsassessments.org/wp-content/uploads/2015/08/Grade7-FSA-ItemSpecs-508_Final_052217.pdf)											